

INTERNATIONAL SEARCH REPORT

International Classification No.

PCT/EP 03/06287

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07D285/14 C07D417/14 C07D513/04 H05B33/14 H01L51/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

CHEM ABS Data, WPI Data, PAJ, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	YAMASHITA Y ET AL: "Synthesis and Properties of Benzobis(thiadiazole)s with Nonclassical pi-Electron Ring Systems" TETRAHEDRON, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 53, no. 29, 1 July 1997 (1997-07-01), pages 10169-10178, XP004106132 ISSN: 0040-4020	1,6-11
Y	Verbindungen 6c,6e,7c,9b auf Seite 10170, Schema 1, Tabelle 1, Verbindungen 12a und 12b auf Seite 10173, Schlussfolgerung auf Seite 10174 und die jeweiligen experimentellen Daten ab Seite 10175.	2-5

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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

11 September 2003

Date of mailing of the international search report

06/10/2003

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INTERNATIONAL SEARCH REPORT

Internation Publication No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 21, 3 August 2001 (2001-08-03) & JP 2001 097949 A (IDEMITSU KOSAN CO LTD), 10 April 2001 (2001-04-10)	1,2,4, 7-11
Y	Zusammenfassung examples A-1,2,4,6-8,11,12,20-22,26,29,33,34	3,5,6
X	JP 2002 069044 A (IDEMITSU KOSAN CO LTD) 8 March 2002 (2002-03-08)	1,2,4, 7-11
Y	Verbindungen A3, A21 auf den Seiten 5,7 claims; example 3; table 1	3,5,6
X	JAYAKANNAN M ET AL: "Synthesis and Structure-Property Relationship of New Donor-Acceptor-Type Conjugated Monomers and Polymers on the Basis of Thiophene and Benzothiadiazole" JOURNAL OF POLYMER SCIENCE, POLYMER CHEMISTRY EDITION, JOHN WILEY AND SONS. NEW YORK, US, vol. 40, no. 2, 2002, pages 251-261, XP002254026 ISSN: 0360-6376	1,2,7
Y	Schema 1,3 page 254 -page 255; figures	3-6,8-11
X	MEIJER E W ET AL: "Band-Gap Engineering of Donor-Acceptor-Substituted conjugated polymers" CHEMISTRY - A EUROPEAN JOURNAL, VCH PUBLISHERS, US, vol. 4, no. 7, 1998, pages 1235-1243, XP002254027 ISSN: 0947-6539	1-3,7
Y	Schema 1, Verbindungen 2,3,8,10 and 11 page 1240, column 2 -page 1242, column 2; figure 1; table 1	4-6,8-11
X	WO 00 46321 A (DOW CHEMICAL CO) 10 August 2000 (2000-08-10)	1,2,7
Y	claims 1,19-22; examples 12-15	3-6,8-11
Y	RONCALI J ET AL: "New synthetic strategies towards conjugated NLO-phores and fluorophores " SYNTHETIC METALS, ELSEVIER SEQUOIA, LAUSANNE, CH, vol. 119, 2001, pages 527-528, XP002254025 ISSN: 0379-6779 page 528; table 2	1-11
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International Publication No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KITAMURA CHITOSHI ET AL: "Design of Narrow - Bandgap Polymers. Synthese and Properties of Monomers and Polymers Containing Aromatic - Donor and o-Quinoid-Acceptor Units" CHEMISTRY OF MATERIALS, AMERICAN CHEMICAL SOCIETY, WASHINGTON, US, vol. 8, no. 2, 1996, pages 570-578, XP002165567 ISSN: 0897-4756 Schlussfolgerung auf Seite 575 page 577 -page 578; figures 1,2; examples 3-5,7,8; table 1	1-11
Y	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 13, 5 February 2001 (2001-02-05) & JP 2000 282024 A (MITSUBISHI CHEMICALS CORP), 10 October 2000 (2000-10-10) abstract; table 1	1-11
Y	PATENT ABSTRACTS OF JAPAN vol. 017, no. 678 (C-1141), 13 December 1993 (1993-12-13) & JP 05 222361 A (MITSUBISHI KASEI CORP), 31 August 1993 (1993-08-31) abstract; table 1	1-11
P,X	PATENT ABSTRACTS OF JAPAN vol. 2003, no. 08, 6 August 2003 (2003-08-06) & JP 2003 104976 A (MITSUBISHI CHEMICALS CORP), 9 April 2003 (2003-04-09) abstract; claims 1,7-9; examples I-1-I-4,,I-5-I-18; table 1	1,2,7-11
P,Y		3-6
P,X	US 2003/099785 A1 (KELLY STEPHEN MALCOLM ET AL) 29 May 2003 (2003-05-29)	1,2,7
P,Y	page 6, paragraph 91 -page 7; paragraph 103; figure 12; examples 22-24.	3-6,8-11

INTERNATIONAL SEARCH REPORT

International application No.

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 1 (in part), 8-11 (in part)
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
See continuation in supplement sheet PCT/ISA/210

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

Continuation of I.2

Claims: 1 (in part), 8-11 (in part)

The current Claim 1 relates to a disproportionately large number of possible compounds. In fact it encompasses so many alternatives due to the unlimited term "organic group" that it appears too broad, such that it is impossible to conduct a meaningful search. Claim 1 also appears to be insufficiently supported by the description. The search was therefore directed to the parts of the claims that can be considered concise and supported by the description, that is to the compounds indicated in Claims 2-7 as well as the uses in Claims 8-10 and the component from Claim 11 insofar as they relate to Claims 2-7. All examples were then searched as well.

The applicant is advised that claims or parts of claims relating to inventions in respect of which no international search report has been established normally cannot be the subject of an international preliminary examination (PCT Rule 66.1(e)). In its capacity as International Preliminary Examining Authority the EPO generally will not carry out a preliminary examination for subjects that have not been searched. This also applies to cases where the claims were amended after receipt of the international search report (PCT Article 19) or where the applicant submits new claims in the course of the procedure under PCT Chapter II.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.

PCT/EP 03/06287

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 2001097949	A	10-04-2001	NONE	
JP 2002069044	A	08-03-2002	NONE	
WO 0046321	A	10-08-2000	CA 2360644 A1 CN 1337987 T EP 1155096 A1 JP 2002536492 T WO 0046321 A1 US 6353083 B1	10-08-2000 27-02-2002 21-11-2001 29-10-2002 10-08-2000 05-03-2002
JP 2000282024	A	10-10-2000	JP 3243820 B2	07-01-2002
JP 05222361 4	A		NONE	
JP 2003104976	A	09-04-2003	NONE	
US 2003099785	A1	29-05-2003	US 2003021913 A1	30-01-2003